



ARIN Engineering Report

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Engineering Theme

- **2012 success is being aided by contractors (but not near as many)**
- **The search is on to fill open engineering slots**
- **Lots of work is done, but there is much more to do**

Staffing

- **Operations**
 - 5 People + Manager (down 1 since ARIN 29)
 - 2 DBA slots open
- **Development**
 - 5 Developers + Manager
 - 2 Contractors (down 3 more since ARIN 29)
- **Quality Assurance**
 - 3 QA + Manager
 - 4 Contractors
- **Project Management**
 - 1 Filled! (up 1 since ARIN 29)
- **Management**
 - 1 (me)

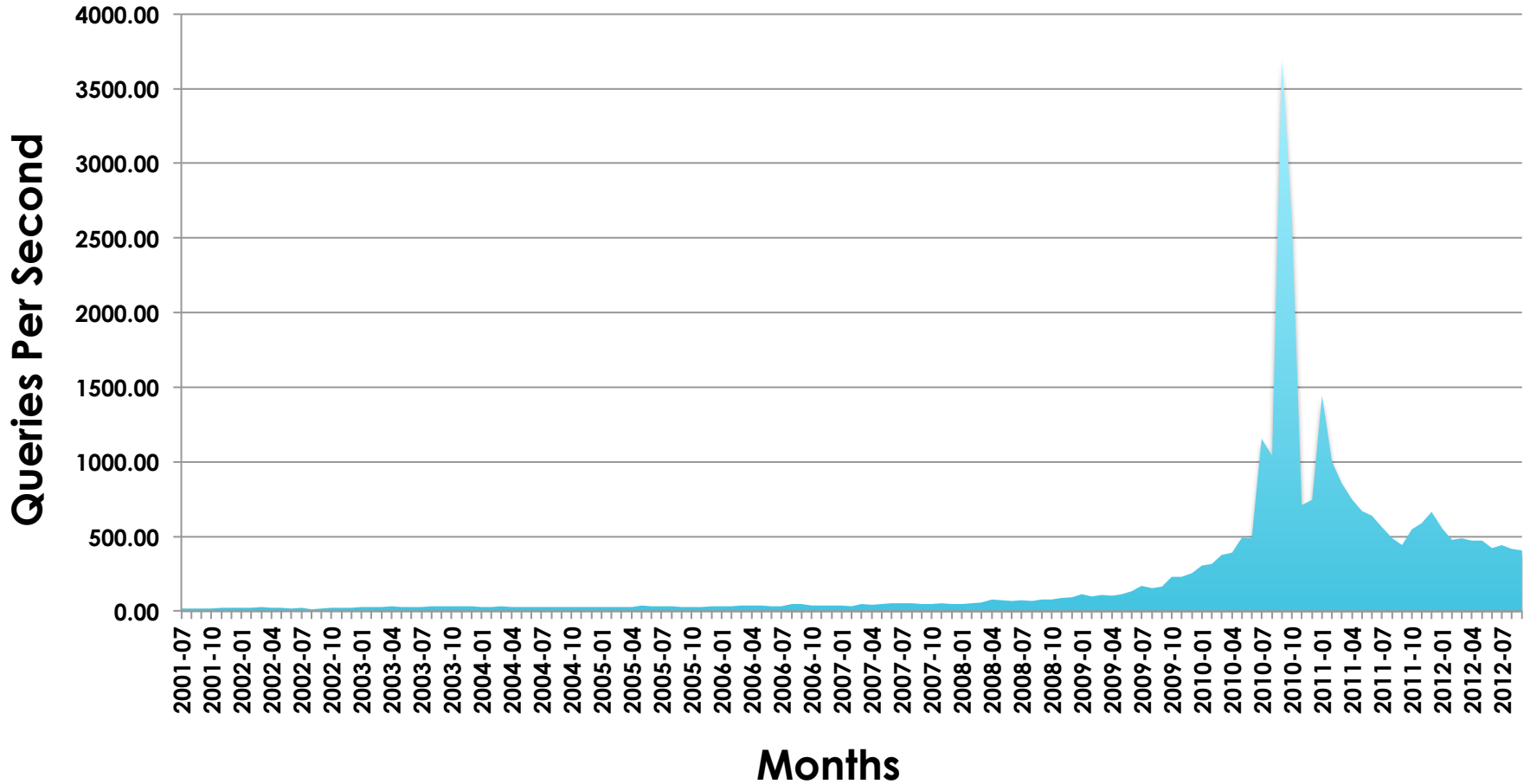
Operations

- **Upgrading end-of-life equipment**
- **Maintaining the various environments we have running (Production/OT&E/Dev/QA/Staging)**
- **Load Balancer challenges**
- **Moving production to the colocation facility**
- **IT support**
- **RPKI rollout**

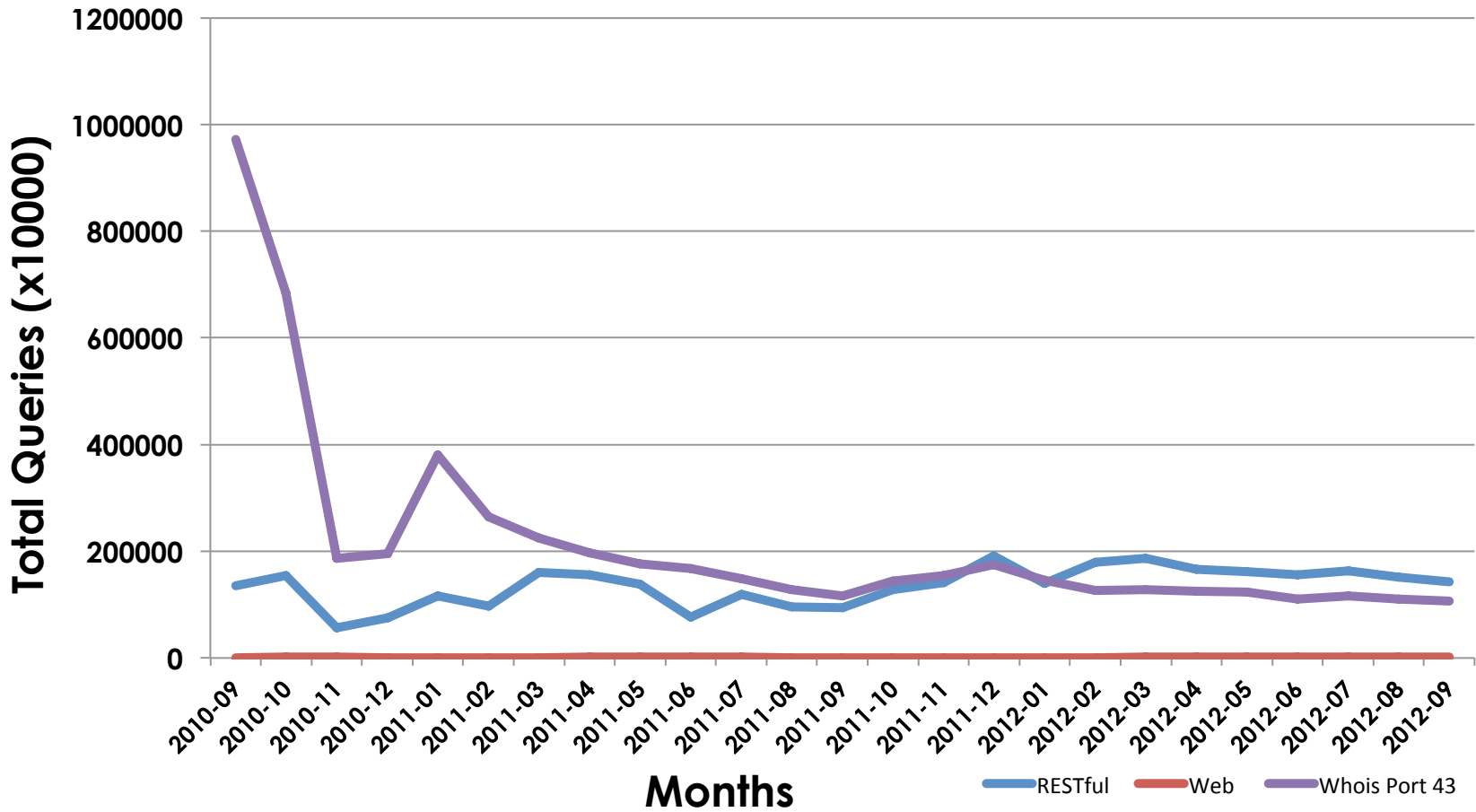
Whois-RWS Traffic Loads

- **Running “normally” now at 405 queries per second (QPS)**
 - down 70 QPS since last meeting
- **RESTful calls have overtaken Port 43 calls since March**
 - 1.5 Billion RESTful calls for September
 - 1.1 Billion Port 43 queries

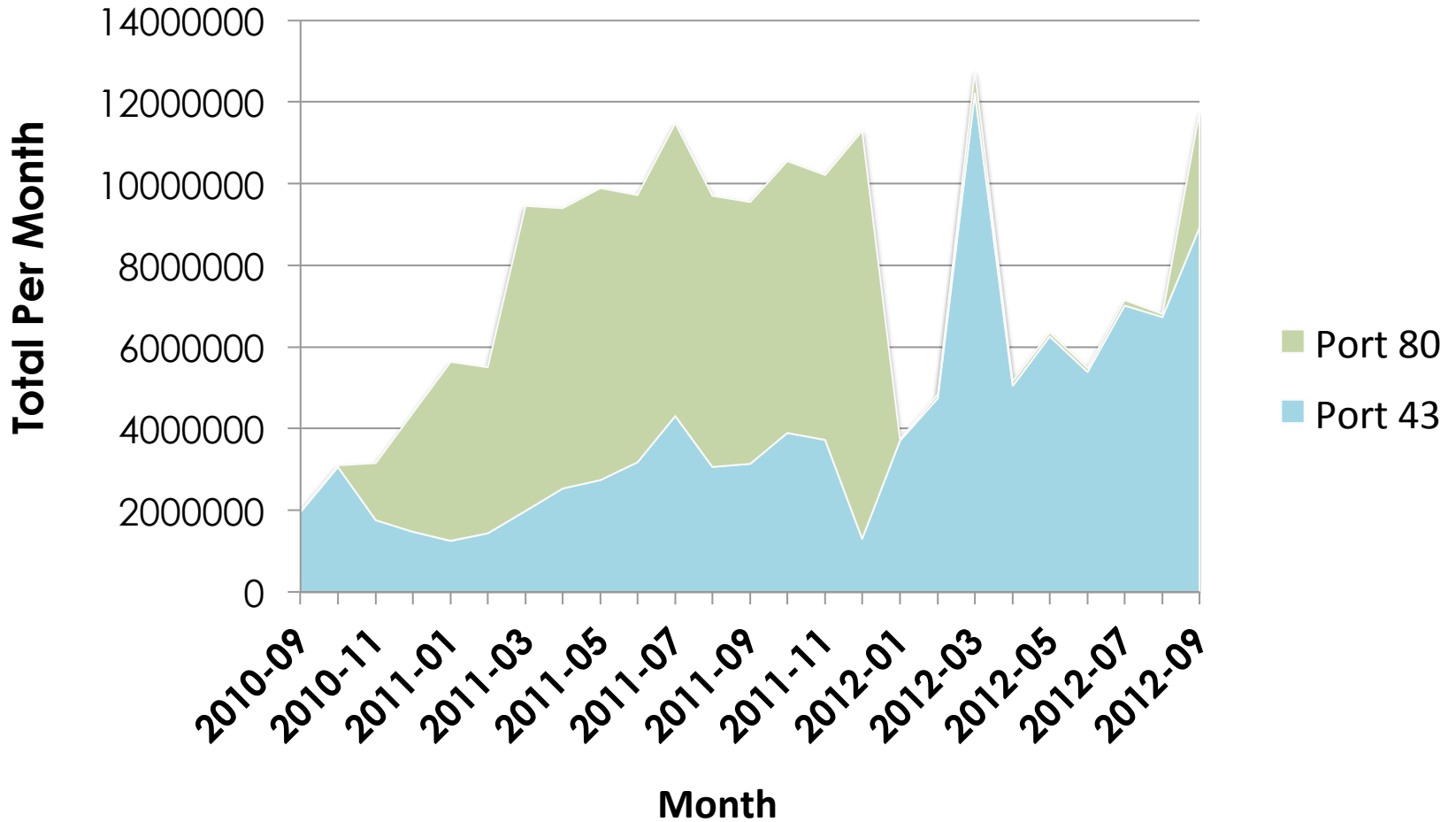
Whois-RWS Statistics Queries on Port 43



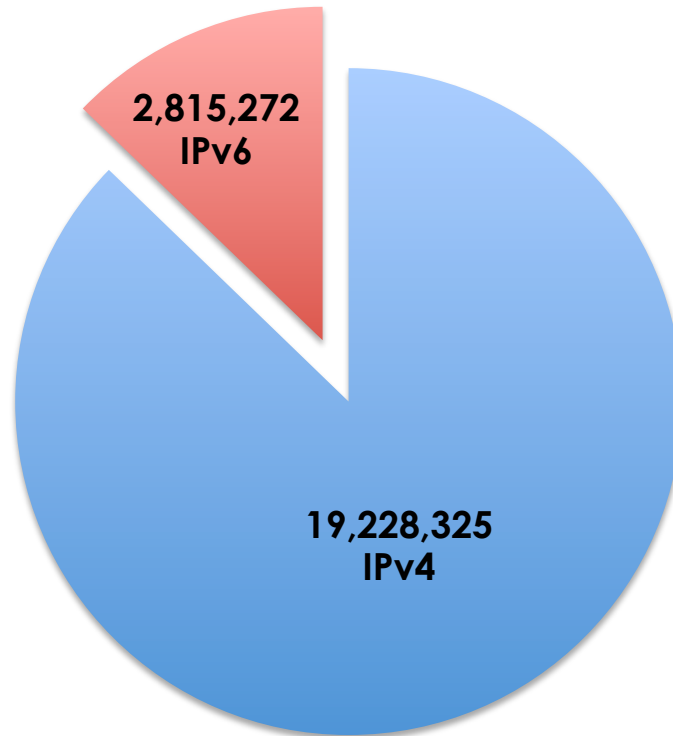
Whois-RWS Statistics Queries



Whois-RWS – IPv6



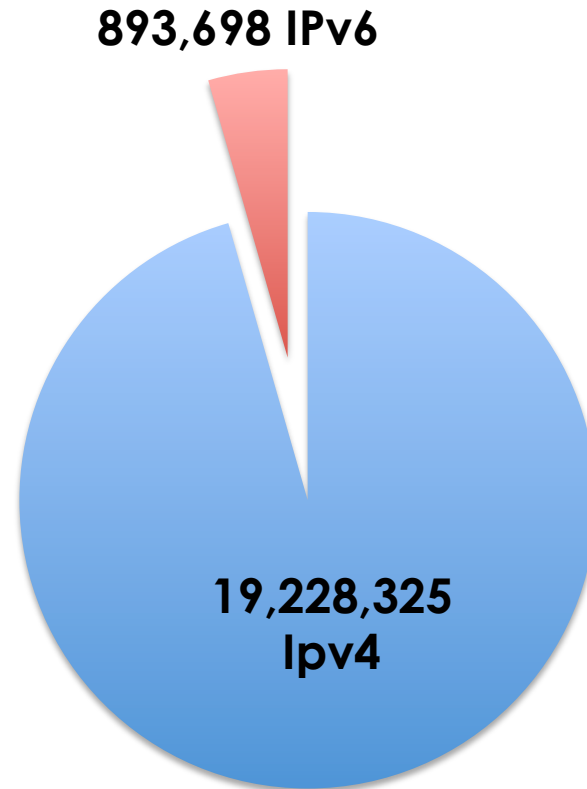
Web Traffic V4 versus V6



12.77% Traffic on the website is IPv6

BUT....

Web Traffic IPv4 versus IPv6



**Take out the IPv6 connectivity testers
IPv6 is 4.05% of our total traffic**

Development/QA

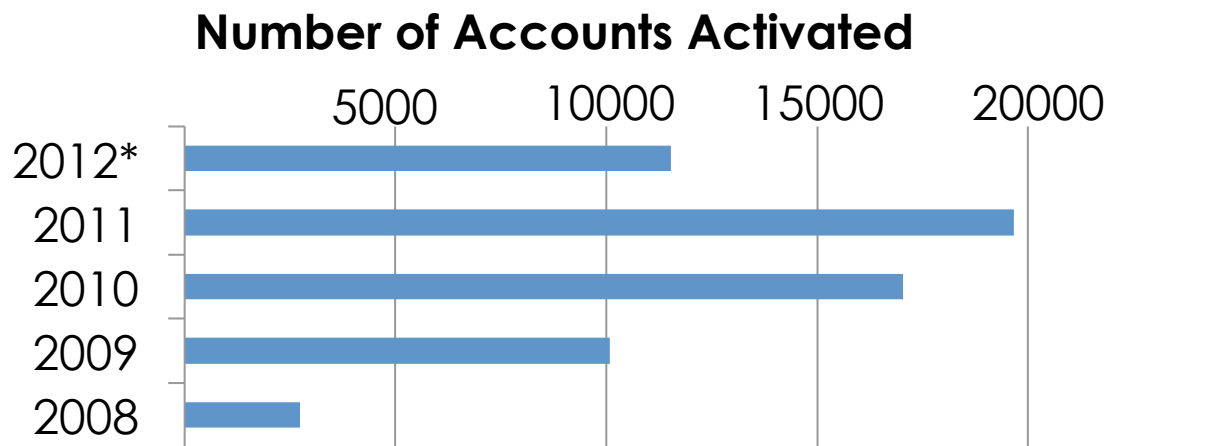
- Improvements to existing systems
- ARIN Online releases since ARIN XXVIII
 - RPKI!
 - Integrated payments
 - Move from Red Hat JBoss to JBoss AS7 Community Edition
 - Runout functionality enhancements for staff
 - Various minor bug fixes

Initiatives Currently Underway

- **Implement delegated RPKI**
- **Extended statistics generation**
- **Improvements to internal billing systems**
- **Move from Oracle to PostgreSQL**

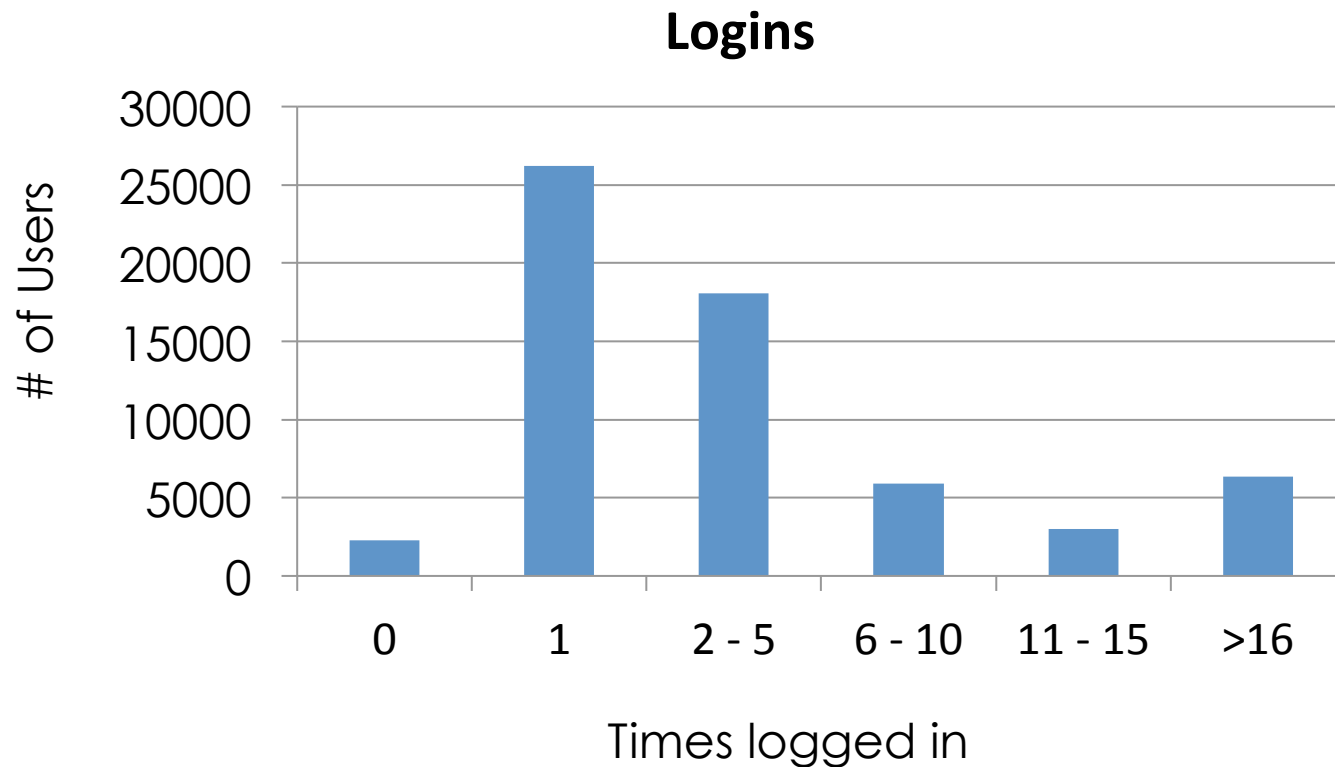
How is ARIN Online used?

- 62,998 accounts activated since inception through Q3 of 2012



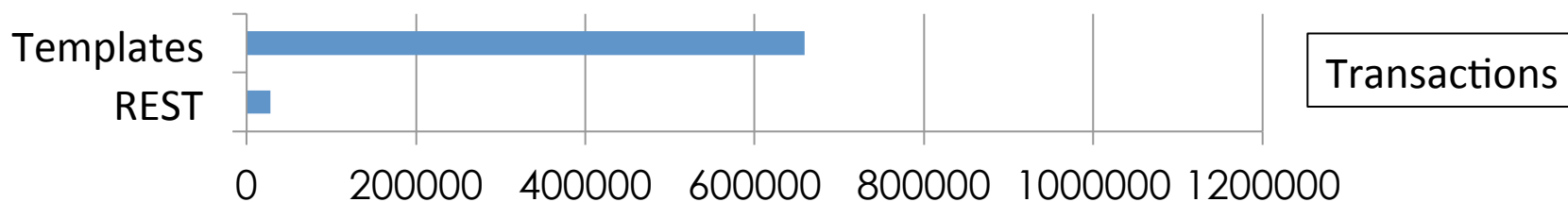
* Through Q3 of 2012

Active Usage of ARIN Online

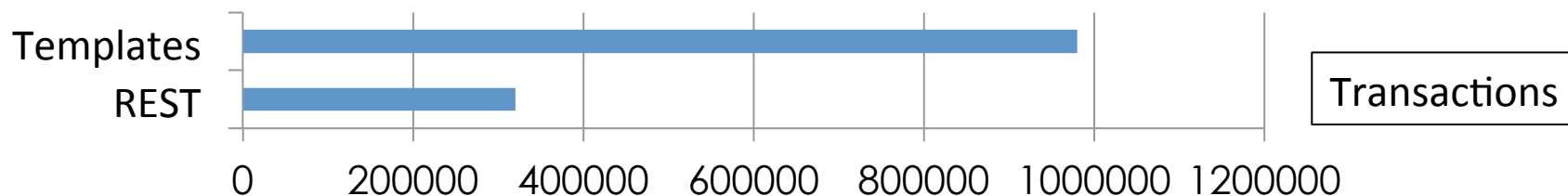


Reg-RWS (RESTful Provisioning)

At ARIN XXIX



Today



Cumulative totals since April, 2011

Evolution/Deployment of RPKI

- **A brief look at**
 - **Pilot participation**
 - **Feedback**
 - **The move to production**

RPKI Pilot

- **Pilot period**
 - Operational from 7/2009 until 9/2012
 - 63 users
 - 76 ROAs in the pilot
- **Services are still hooked into the Pilot**
 - 15000 fetches per day at peak usage
 - Let signatures expire after production deployment
 - 4000 fetches today on a empty repository

RPKI Pilot

- Feedback on the Pilot over the three years
 - **Comments**
 - Just one -“weird passwords”
 - **Operational Learning**
 - People noticed for a time when signatures expired
 - A few data entries did not match global routing entries

Production RPKI

- Getting the Trust Anchor
 - **27 people have signed the RPA**
 - **17 people are non-RIR members**
- Signing Resources
 - **7 Organizations**
 - **19 ROAS**
 - **30 Networks/ASs**

RPKI Results

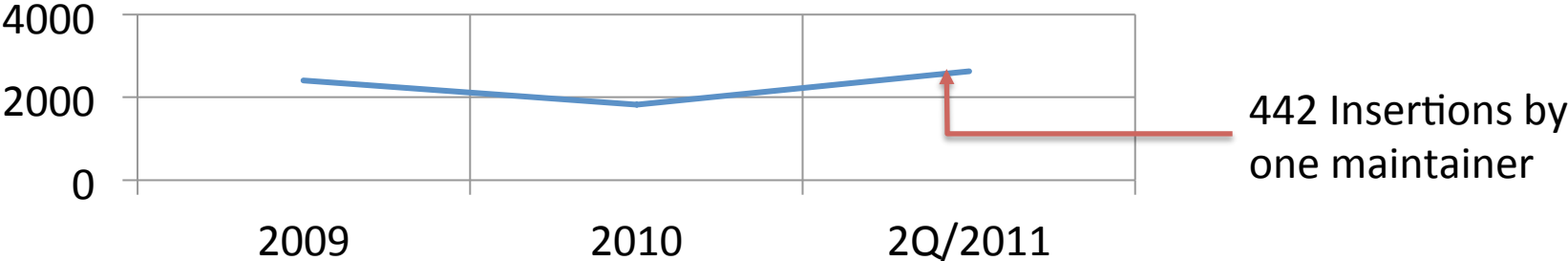
- No real landrush to join
- Is it still in the experimental stage?
- Has been a multi-year effort
 - **\$2.5 Million**
 - **Very complex code**
- Hope it has success in the long run

Maybe this will be like the IRR

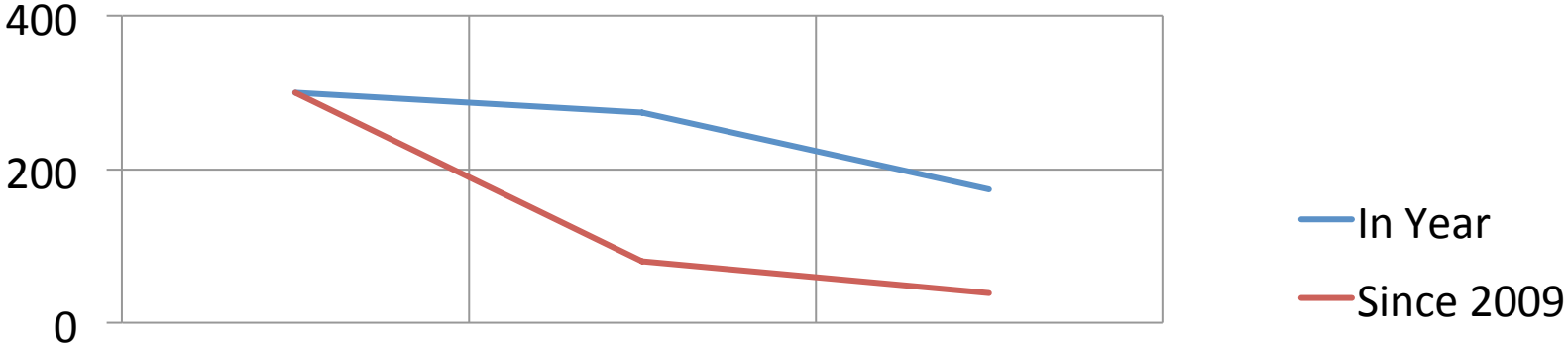
- Low usage when started multi-month project to upgrade the IRR
- Report from ARIN XXVIII showed low usage which in turn called into question the need to upgrade

IRR Usage From 2009-2Q/2011

Insertions/Changes



442 Insertions by one maintainer



Active Maintainers

Now the Traffic on IRR has gone up after Upgrade in Sept 2011

- Maintainers
 - **1,682 pre-conversion**
 - **1,812 today**
- Routes
 - **17,937 pre-conversion**
 - **20,513 today**
- Networks
 - **456 pre-conversion**
 - **539 today**

RPKI Challenges

- Protocol is mature – kind of
 - Validators do not allow for extension that we require (certificate policies extension)
 - Draft is to be written within the IETF to explicitly mention this
 - Rsync may not be the best protocol to retrieve data from repositories – quickly becomes a DDOS vector
 - Work on a HTTP transport for getting data from repositories
- Challenges
 - ERX and Inter-RIR Transfers
 - Merging with the Global Trust Anchor
 - Simultaneous operation of RIR Trust Anchor and Global Trust Anchor

Schedule Pressure

- ACSP Suggestions (8 Pending)
- DNSSEC improvements
- Streamlined Transfer Service
- CMSD membership/voter functionality
- Integration of IRR within ARIN Online
- Lame Delegation reporting
- Additional OT&E services
- Alternative RPKI-like services
- Billing Management Improvements

Schedule Pressure

- **Community needs/Policy**
 - Ways to better vet/implement community needs
 - Need to hear from you
- **Technical and Operational debt**
 - Many existing internal processes are inefficient and labor intensive
 - Software changes
- **Thought Leadership**
 - Whois-RWS
 - RPKI
 - Research

Comments?